CoffeeChaff

Title:

Handheld Spherical-Head Vacuum Device and Bowl System for Coffee Chaff Removal and Bean Cooling

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🔍 Background & Problem

During the coffee roasting process, roasted beans shed a papery skin known as **chaff**. This lightweight material clings to the beans or scatters across surfaces, making cleanup difficult. Existing methods — such as blowing, shaking, or using general vacuums — are messy, imprecise, or risk removing the beans themselves.

There is no known handheld consumer tool that offers **precise, non-invasive chaff removal** without disturbing roasted coffee beans, nor one that combines stirring, vacuuming, and suction tuning for the specific physical properties of coffee.

Cooling the beans rapidly after roasting is also a crucial part of coffee preparation. Many existing solutions focus solely on chaff removal without contributing effectively to cooling, which can compromise bean quality.

While other chaff-removal and cooling devices exist, they are often less refined, bulkier, or not designed with **home roasters** in mind. This invention offers a more **craft-oriented**, **ergonomic**, and **precise** alternative.

💡 Solution

This disclosure presents a **handheld vacuum and bowl system** that removes chaff and cools beans through controlled suction, ergonomic stirring, and specialized nozzle geometry.

🛠️ Device Description

1. Handheld Vacuum Unit:

- Spherical or mushroom-shaped intake head
- Covered in perforations **1.5mm–2.5mm** in diameter
- Allows lightweight chaff to be drawn in while excluding heavier beans
- **Slot-like hole geometry (~2.5mm wide and long)** prevents chaff from getting stuck, unlike traditional round holes

2. Nozzle Variants:

- **Bobbled cone-shaped head** with vertical slots for deep stirring and surface-layer targeting
- **Capsule- or egg-shaped head** with radial vents for gentle insertion and rotation
- **Flattened inverted nozzle** (e.g. NOZZLEGOOD) for efficient surface-level suction, especially where cone shapes fail to reach deeply

3. Adjustable Suction:

- Tuned for chaff removal without lifting beans
- Prevents clogging and bean loss
- Supports multiple roast types (light, medium, dark)

4. Hemispherical Bowl:

- Holds beans securely
- Encourages rolling and natural movement
- Prevents spillage during use

5. Operation Method:

- Used in a **circular, spoon-like motion**
- Stirring agitates clinging chaff for more efficient removal

- Airflow from suction also helps **cool the beans naturally**

6. Optional Features:

- Mesh filter or electrostatic chaff trap
- Transparent chaff collection chamber
- Detachable head for cleaning
- Suction presets based on roast profile

🔬 Novelty and Use Case

This system is novel in combining:

- Specialized **intake geometries** (sphere, cone, capsule, flattened)
- Suction tuned to the **mass difference** between beans and chaff
- A usage method that includes **manual stirring + vacuuming**
- Built-in **bean cooling** through airflow
- **Slot-style holes (~2.5mm)** for smooth operation without clogging

No comparable product integrates all these functions in a **compact, user-friendly format** tailored for home or small-batch roasters.

⚖️ Use Cases

- Home roasting setups
- Small-batch roasting labs
- On-demand café roasting

- Enthusiasts focused on quality & cleanliness

📌 Prior Art Statement

While general-purpose vacuums and bean coolers exist, none provide:

- A spherical or mushroom-shaped perforated vacuum head
- Multiple nozzle shapes designed for **proximity and airflow targeting**
- Adjustable suction for **chaff selectivity**
- A **half-sphere bowl** for ergonomic bean movement
- An integrated **cooling mechanism** via stirring airflow
- **Anti-clogging slot geometry** (~2.5mm)
- A process involving **spoon-like stirring and suction** for effective chaff separation

This document serves as a **prior art disclosure** for the described invention.